



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/697,698	10/31/2003	Cullen E. Bash	100201724-5	9834

7590 05/10/2004

HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P. O. Box 272400
Fort Collins, CO 80527-2400

EXAMINER

NORMAN, MARC E

ART UNIT PAPER NUMBER

3744

DATE MAILED: 05/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<p align="center">Office Action Summary</p>	Application No. 10/697,698	Applicant(s) BASH ET AL.	
	Examiner Marc E. Norman	Art Unit 3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-4,8,9,12,25,38 and 51-68 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-4,8,9,12,25,38 and 51-68 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10/31/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 12, 25, 38, 56-58, 61-63, and 66-68 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakazato et al.

As per claim 12, 25, and 38, Nakazato et al. discloses activating cooling system 11 and providing openings in a plurality of returns 7b, the returns removing cooling fluid from a plurality of data racks; opening a plurality of vents 20 to supply the racks with cooling fluid (column 3, lines 51-54; column 4, lines 22-26); sensing the temperature of the racks (by temperature sensors 32 and 33); varying the removal of cooling fluid from the racks based on the temperature being outside a predetermined range (e.g., a range to provide an optimum temperature distribution within the room space based on set temperature Ts (column 5, lines 58-65)); and varying cooling fluid flow through the vents in response to the sensed temperatures (column 4, lines 22-26).

As per claims 56, 61, and 66, Nakazato et al. discloses the characteristic being volume flow rate (by air volume control unit 20).

Art Unit: 3744

As per claims 57, 62, and 67, Nakazato et al. discloses sensors 33 located outside of the racks and the controller independently controlling the returns based on the sensed temperatures (step 105).

As per claims 58, 63, and 68, Nakazato et al. discloses independently controlling the vents (by respective controller 20).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 2-4, 8, 9, 51, and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spinazzola et al. in view of Nakazato et al.

As per claim 8, Spinazzola et al. teaches a cooling system for cooling racks in a data center comprising a cooling device including fans 16 and 25; a plenum 4b having a plurality of returns 24 and an outlet 28 in fluid combination with the fans, wherein the returns are configured

Art Unit: 3744

for removing the cooling fluid from the data center and are operable to vary a speed of fans 25 and thus a characteristic of the removal through the returns (see column 5, lines 39-41 regarding fans 25 being of variable speed); a vent plenum 6 having a plurality of outlets (2a, 8a) and an inlet 22, wherein the inlet is in fluid communication with fans 16 and 25. Spinazzola does not teach the vents being operable to vary a characteristic of the cooling fluid or a controller to control the vents to independently vary the cooling fluid through the vents. Nakazato et al. teaches a cooling system for cooling racks in a data center wherein vent controllers 20 independently vary the volume of cooling fluid through the respective vent openings 2b (see column 3, lines 51-54 and column 4, lines 22-26). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the vent control structure of Nakazato et al. to the system of Spinazzola et al. for the purpose of further refining the control of air flow to the cooling racks.

As per claim 2, Spinazzola et al. teaches the cooling characteristic being volume flow rate (in response to the speed variation of the fan).

As per claims 3 and 4, Spinazzola does not specifically teach independent control of fans 25 in the returns to independently vary the characteristic of the cooling fluid removal. Nakazato et al. teaches a similar arrangement whereby fans 7f of returns 7b from the data racks 7 are controlled to independently vary the removal of cooling fluid from each of the racks according to the temperatures sensed by sensors 32 and 33. Nakazato et al. teaches controller 40 independently controlling the flow rate of each return (Figure 2); and a plurality of temperature sensors 32, 33 and controller 40 independently controlling the returns in response to the measured condition (Figure 3). It would have been obvious to one of ordinary skill in the art at

Art Unit: 3744

the time the invention was made to apply these air removal control features of Nakazato et al. to the plenum system of Spinazzola et al. for the purpose of accurately controlling the temperatures of the data racks.

As per claim 9, to the extent that varying the return fans 25 of Nakazato et al. affect temperature readings at sensors 31, 32, and 33, then the vents are controlled in response to the returns being varied (see column 4, lines 22-26).

As per claim 51, Nakazato et al. further teaches sensors 33 located outside of the racks and the controller independently controlling the returns based on the sensed temperatures (step 105).

As per claim 54, Nakazato et al. further teaches the characteristic being volume flow rate (by air volume control unit 20).

Allowable Subject Matter

Claims 52, 53, 55, 59, 60, 64, and 65 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc E. Norman whose telephone number is 703-305-2711. The examiner can normally be reached on Mon.-Fri., 8:00-5:30, with first Fridays off.

Art Unit: 3744

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Denise Esquivel can be reached on 703-308-2597. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MN



MARC NORMAN
PRIMARY EXAMINER